



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/846,153   | 04/30/2001  | Seong-Mo Park        | 300055.490          | 6024             |
| 500  | 7590        | 03/15/2004           | EXAMINER            |                  |
| SEED INTELLECTUAL PROPERTY LAW GROUP PLLC<br>701 FIFTH AVE<br>SUITE 6300<br>SEATTLE, WA 98104-7092 |             |                      | PHILIPPE, GIMS S    |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2613                | 3                |

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/846,153

**Applicant(s)**

PARK ET AL.

**Examiner**

Gims S Philippe

**Art Unit**

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is a first action in response to application no. 09/846,153 filed on March 30<sup>th</sup> 2001 in which claims 1-12 are submitted for examination.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, and 7-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Butter et al. (US Patent no. 6,549,575).

Regarding claims 1 and 7, Butter discloses a video image motion estimation method and apparatus including a processing element block for receiving a reference data and a current data to obtain a motion vector in which a sum of absolute difference between the two input values is minimized (See Butter fig. 1, item 43, col. 4, lines 60-66, and col. 10, lines 16-29) and a comparator comprising a down sampling means for down sampling the reference data and the current data (See Butter col. 6, lines 57-64 and col.

Art Unit: 2613

7, lines 11-18), and a memory for respectively storing the down sampled reference data and a current data and then providing the data to the processing element block (See Butter col. 7, lines 10-35).

As per claims 4-5 and 10-11, Butter discloses a video image motion estimation apparatus including a processing element block for receiving a reference data and a current data to obtain a motion vector in which a sum of absolute difference between the two input values is minimized (See Butter fig. 1, item 43, col. 4, lines 60-66, and col. 10, lines 16-29) and a comparator comprising a demultiplexer for separating an even column and an odd column of the reference data, an even column memory for storing an even column of the reference data and then providing the even column to the processing element block, an odd column memory for storing an odd column of the reference data and then providing the odd column to the processing element block, and a current memory for storing the current data and then providing the current data to the processing element block (See Butter figs. 8-10, and col. 9, lines 23-57).

As per claims 2 and 8, most of the limitations of these claims have been noted in the above rejection of claims 1 and 7. In addition, Butter further discloses down sampling by 2:1 by selecting only lower  $n/2$  bits among  $n$  (multiple) bits input data (See Butter col. 6, lines 5-9).

As per claim 3 and 9, most of the limitations of these claims have been noted in the above rejection of claims 1 and 7. In addition, Butter further individually separates the means for down sampling the reference data and the means for down sampling the current data (See Butter col. 6, lines 57-64).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butter (US Patent no. 6,549,575) in view of Ran et al. (US Patent no. 5,706,059).

Regarding claims 6 and 12, most of the limitations of these claims have been noted in the above rejection of claims 5 and 11.

It is noted that Butter is silent about sequentially writing reference data into the column block per motion estimation, and updating with new data the reference data in the column.

Ran discloses a motion estimation method and apparatus comprising the step of sequentially writing reference data into the column block per motion estimation, and

Art Unit: 2613

updating with new data the reference data in the column (See Ran col. 6, lines 43-67 and col. 7, lines 1-8).

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of modifying Butter's motion estimator by incorporating Ran's step of sequentially writing reference data into the column block per motion estimation, and updating with new data the reference data in the column. The motivation for performing such modification in Butter is to reduce bandwidth requirement as taught by Ran (See Ran col. 7, lines 8-12).

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fimoff et al. (US Patent no. 6,504,872) teaches down-conversion decoder for interlaced video.

Merhav et al. (US Patent no. 5708732) teaches fast DCT domain downsampling and inverse motion compensation.

Song et al. (US Patent no. 6208692) teaches apparatus and method for performing scalable hierarchical motion estimation.

Song et al. (US Patent no. 6560371) teaches apparatus and method for employing M-ary pyramids with N-scale tiling.


Krishnamurthy et al. (US Patent no. 6430317) teaches method and apparatus for estimating motion using block features obtained from M-ary pyramid.

Art Unit: 2613

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gims S Philippe whose telephone number is (703) 305-1107. The examiner can normally be reached on M-F (9:30-7:00) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris S Kelley can be reached on (703) 305-4780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Gims S Philippe  
Primary Examiner  
Art Unit 2613

GSP

March 11, 2004